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ABSTRACT

This report describes the following components of the Nestle Workplace Literacy Project: six job task analyses, curricula for six workplace basic skills training programs, delivery of courses using these curricula, and evaluation of the process. These six job categories were targeted for training: forklift loader/checker, BB's processing systems operator, department mechanic, Pearson kitchen helper, Butterfinger packaging systems operator, and Butterfinger manufacturing systems operator. A total of 109 participants attended classes from these target groups. The curriculum development process included design of instruction for a 48-hour class in each job category. According to the evaluation, four of the six courses resulted in observable improvements in job performance. The report includes an overview of the training conducted, description of job performance outcomes, and discussion of learner achievement outcomes for each of the six job categories. Summaries of answers to the evaluation questions grouped by the six job categories are appended. A critical review of the Internal Evaluation is divided into three sections. The first establishes the basis for evaluation review or metaevaluation and gives those models with differing criteria of goodness in evaluation. The second section looks at the structure of the evaluation project as a whole. It makes suggestions for reformatting the contents and enhancing readability. Section 3 makes specific comments on the draft itself. The review closes by endorsing the evaluation of what appeared to be an excellent educational program. (YLB)

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ED 376 310

INTERNAL EVALUATION REPORT

FEDERAL WORKPLACE LITERACY PROJECT

PR/AWARD NO. U198A30096

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SEPTEMBER, 1994

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EXECUTIVE SUMMARY:

The Nestle Workplace Literacy Project completed all of its activities as outlined in the grant proposal. The components of the project included six job task analyses, curricula for six workplace basic skills training programs, delivery of courses utilizing these curricula, and evaluation of the process.

The project was completed within the time parameters originally contracted and within the budget guidelines established. A summary of the final budget expenses is included in this report.

Four of the six courses resulted in observable improvements in job performance. The remaining two courses had perceptions of improvement by the trainees, but little documentation by supervisors and external observers. One of these was the first course offered. The other was the victim of scheduling problems as a result of production requirements. These scheduling problems negatively affected some of the participants, which led to some attendance fluctuations.

The original objectives were satisfied:

1. Improvements were recorded for participants as evidenced in a decrease in scrap and rework, increased production output, and improved quality. The plant-wide safety record also improved.

2. Improvements in reading, writing, problem solving, and team work were noted by most of the trainees.

3. Approximately 50% of those targeted agreed to attend the courses offered. Classes were mandatory for one group of employees. All others attended voluntarily. Some participants continued to attend other skills classes after completion.

4. Several marginally performing incumbents improved their skills sufficiently as a result of this training program to ensure their tenure in their present positions.

5. Attendance was very good. Several early leavers resulted from transportation problems and lack of interest in the subject matter, but overall attendance was very good. Most of the classes were held right before or right after the normal work shift with overtime pay provided for attendance.

6. Instructor quality was rated very high by participants.

7. Supervisors indicated the project had a very positive effect on participants and resulted in less calls to them for assistance for minor production difficulties.

EXECUTIVE SUMMARY (Cont.)

8. Trainees indicated a high degree of satisfaction with the project.

9. The fact that the project was successfully implemented is in itself an indicator of positive collaboration and teamwork between organized labor and management. Other food manufacturers who also received Federal Workplace Literacy grant money (e.g. Nabisco) have been unable to complete their project as planned due to an inability of labor and management to cooperate.

SUMMARY ANALYSIS:

The concept of providing basic skills training in a workplace context enhanced workers skills. This skill enhancement then resulted in improved production quality and quantity. Workers attitude toward the learning process improved as a result of their participation in the classes. The program was attended by half of the target population, which is the largest market penetration ever at this site for a basic skills training program.

One of the keys to success for this project was the detailed task analysis performed for each of the positions. The original project plan did not allow enough time to complete this aspect of the project. Actual delivery of instruction was the lowest cost professional expense, so some job task analysis time was charged to instruction. The curriculum developed as a result of the job task analysis included specific lesson plans and class activities. This level of detail was critical to the success of the project.

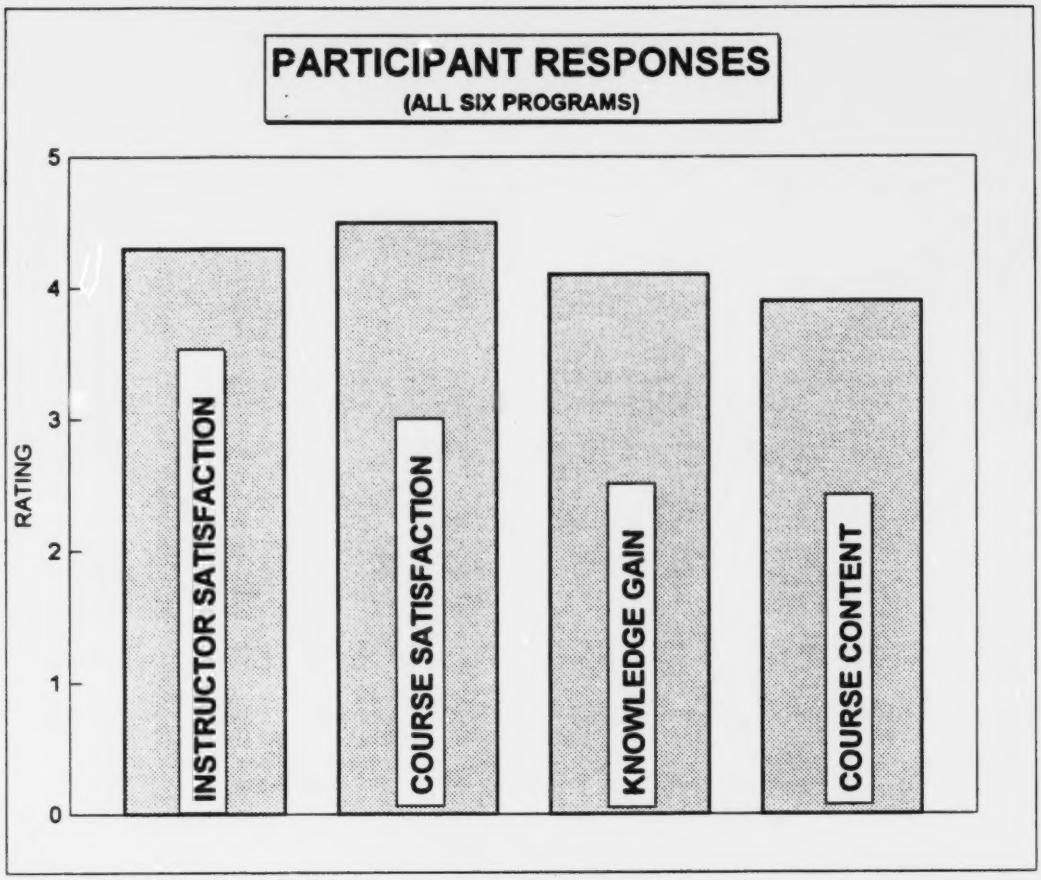
Class scheduling was most effective when classes were held for 2-hour periods twice weekly. This seemed to be enough time for activities to be conducted without draining the trainees energy.The classes that were conducted on 8-hour training segments did not show the same positive results. It appears that the trainees were not able to concentrate and internalize their learning with longer classes.

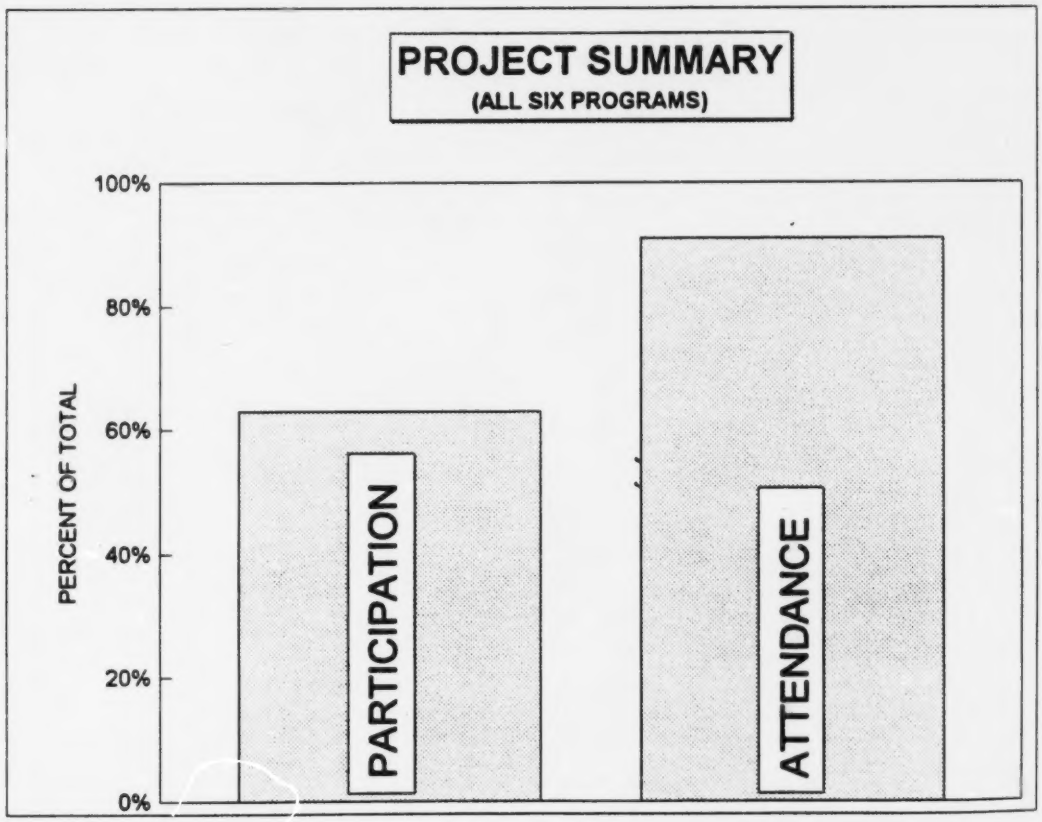
Pre and post testing appeared to be useful when the participants were stable and the groups were large enough to take advantage of ability grouping. For small, heterogenous groups, individual educational plans are recommended.

RECOMMENDATIONS:

Based on the finding of this project, future projects utilizing the workplace-based method for basic skills training should:

- develop detailed job task analyses for curriculum building
- build curriculum in a general manner, allowing the individual participants to customize material based on their needs.
- offer classes in 2-hour segments, meeting twice weekly on non-consecutive days.
- design pre and post tests that accurately reflect course content.
- use ability grouping when scheduling classes.
- provide individual lessons on computer-based media early in the program, not later.
- implement a staff in-service program at the onset of the project.
- consider the benefits of hiring full-time professionals instead of consultants on an hourly basis.
- investigate the possibility of using a full-time project director on-site.
- begin extensive marketing efforts as soon as the target populations have been identified.


PARTICIPANT RESPONSES
(ALL SIX PROGRAMS)
RATING
5
4
3
2
1
0
INSTRUCTOR SATISFACTION
COURSE SATISFACTION
KNOWLEDGE GAIN
COURSE CONTENT


PROJECT SUMMARY
(ALL SIX PROGRAMS)
PERCENT OF TOTAL
100%
80%
60%
40%
20%
0%
PARTICIPATION
ATTENDANCE

INTRODUCTION:

This report summarizes the activities of the Workplace Literacy Grant funded under award number U198A30096. The project began on 3/1/93 and was completed on 8/31/94.

Six job categories were targeted for training through this grant: Forklift Loader/Checker, BB's Processing Systems Operator, Department Mechanic, Pearson Kitchen Helper, Butterfinger Packaging Systems Operator, and Butterfinger Manufacturing Systems Operator. A total of 109 participants attended classes from these target groups.

A task analysis was conducted for each of the six job categories. The task analysis included observation of skilled workers on each job, interviews with workers and supervisors, and study of documents used in the workplace. From this task analysis a curriculum was developed to help improve the basic skills of the workers in the six job categories. The basic skills list was adopted from the American Society of Training and Development publication, Workplace Basics (1990, Carnevale, Meltzer, and Gainer).

The curriculum development process included design of instruction for a 48 hour class for each of the six job categories. The instruction was designed to be very workplace specific in context, yet resulting in improved basic skills as an outcome of the training.

In most cases three 48-hour classes were offered, one for each shift of workers in each job category. There were two exceptions -- the forklift loader/checker group only had one session, since all interested participants could be accommodated at one time, and the BB's Processing Operators, who met for 6 8-hour full-day sessions. The four other job categories met in 2-hour classes meeting twice weekly for twelve weeks, with sessions at the beginning of the afternoon and evening shifts, and at the end of the day shift.

This report will include a summary of answers to the evaluation questions and recommendations for future training.

The information used to answer the evaluation questions was obtained by interviewing course participants and their supervisors, examining production data, analyzing class documentation, and observing participant behavior.

I. FORKLIFT LOADER/CHECKER

Overview:

The forklift loader/checker class was conducted from July through October, 1993. A total of 8 loader/checkers were eligible to participate. Only 3 chose to do so. One left the class early. The class was held on regular work hours for 2 hours, twice per week, for a total of 48 hours. Topics covered in the class were based on the job task analysis performed earlier that year. The curriculum included arithmetic, reading, listening, learning to learn, and basic problem solving. All these subjects were taught using workplace context examples.

Job Performance Outcomes:

Although there is still a need for more training in order to lower the error rate, observations by supervisors and by evaluators indicated that the loader error rate decreased for those who participated in the course. The most positive effect observed by a supervisor was an increased effort to achieve quality. According to the supervisor, "They (the adult learners) seem to grasp the concept that they are not 'just loading a truck' -- they are 'filling a customer order.'"

Learner Achievement Outcomes:

Positive knowledge gains were recorded in basic reading, writing, and mathematics.

II. PEARSON KITCHEN HELPER

Overview:

The Pearson Kitchen Helper classes were conducted from December,1993 through March, 1994. A total of 9 Pearson employees were eligible to participate; 8 chose to do so. There were no early leavers . The class was held either before or after regular work hours for 2 hours, twice per week, for a total of 48 hours. Topics covered in the class were based on the job task analysis performed earlier that year. The curriculum included arithmetic, reading, listening, learning to learn, and basic problem solving. All these subjects were taught using workplace context examples.

Job Performance Outcomes:

Supervisors reported improved job performance by participants and also indicated that participants make fewer requests for assistance since taking the course. In addition, scrap and rework decreased in areas where participants are assigned and production 'start-ups' are being accomplished more efficiently

PEARSON HELPER (Cont.)

Learner Achievement Outcomes:

Seventy-five percent (75%) of participants showed significant improvement in subject areas taught while 25% sharpened up existing competencies, but showed no new learning gain. Several participants were motivated to enroll in additional classes to further enhance their reading skills.

III. DEPARTMENT MECHANIC

Overview:

The Department Mechanic classes were conducted from January through March, 1994. A total of 95 maintenance employees were eligible to participate; 37 chose to do so. There were 5 early leavers . The class was held either before or after regular work hours for 2 hours, twice per week, for a total of 48 hours. Topics covered in the class were based on the job task analysis performed earlier that year. The curriculum included arithmetic, algebra, trigonometry, and problem solving. These subjects were taught using workplace context examples.

Job Performance Outcomes:

Participants exhibited increased speed in performing machine repairs after completing course. Participants also evidenced greater diagnostic accuracy as a result of the training received.

Learner Achievement Outcomes:

Participants showed significant improvement in mathematics and problem solving ability.

IV. BB'S PROCESSING SYSTEMS OPERATOR

Overview:

The BB's Processing Systems Operator classes were conducted from January through April, 1994. A total of 31 were eligible to participate; all chose to do so. There were no early leavers . The class was held either during or in addition to regular work hours for 8 hours, once per week, for a total of 48 hours. Topics covered in the class were based on the job task analysis performed earlier that year. The curriculum included arithmetic, reading, vocabulary, and problem solving. These subjects were taught using workplace context examples.

BB'S PROCESSING SYSTEMS OPERATOR (Cont.)

Job Performance Outcomes:

According to supervisors, job performance of participants has improved, as evidenced in a reduction of calls for assistance for minor process deviations. Total production output for the jobs affected has been more consistent, leading to the ability to open distribution to additional geographic regions in advance of schedule. Several previously marginal performers, who were in danger of being put on probation for poor performance, showed the necessary skill improvement to prevent this from happening.

Learner Achievement Outcomes:

Participants improved their skill in reading of operator interfaces. Teamwork and communication skills were positively impacted.

V. BUTTERFINGER PACKAGING SYSTEMS OPERATOR

Overview:

The Butterfinger Packaging Systems Operator classes were conducted from April through June, 1994. A total of 36 were eligible to participate; 19 chose to do so. There was 1 early leaver. The classes were held either before or after regular work hours for 2 hours, twice per week, for a total of 48 hours. Topics covered in the class were based on the job task analysis performed earlier that year. The curriculum included arithmetic, reading, vocabulary, and problem solving. These subjects were taught using workplace context examples.

Job Performance Outcomes:

Supervisors and managers reported improved job performance as evidenced in ability to diagnose production problems more quickly and more accurately as well as improved quality of daily reports as a result of the writing classes. Supervisors also noted participants' work had a noticeably higher quality after participation in the learning activities. Production rates for participants improved while scrap and rework rates declined. Supervisors reported fewer calls for advice for minor machine problems. Participants were observed working more cooperatively with mechanics and electricians working on the production line.

Learner Achievement Outcomes:

Participants exhibited improved achievement in mathematics, reading, writing, and problem solving. Interpersonal communications and teamwork were also improved as a result of the learning activities of participants.

VI. BUTTERFINGER MANUFACTURING SYSTEMS OPERATOR

Overview:

The Butterfinger Manufacturing Systems Operator classes were conducted from April through June, 1994. A total of 12 were eligible to participate; 8 chose to do so; 2 additional participants attended through their own choice. There were early leaver. The classes were held either before or after regular work hours for 2 hours, twice per week, for a total of 48 hours. Topics covered in the class were based on the job task analysis performed earlier that year. The curriculum included arithmetic, reading, vocabulary, and problem solving. These subjects were taught using workplace context examples.

Job Performance Outcomes:

Supervisors reported improved performance on startpups, more accurate completion of daily reports, and a reduction in calls to supervisors for advice for minor problems. A decline in scrap and rework was noted in the participants' area and there was an improvement in production output. Supervisors reported fewer calls for advice and direction on routine production deviations. Also, supervisors noted improved communication with participants as a result of the learning activity.

Learner Achievement Outcomes:

There were achievement increases for participants in mathematics, reading, and problem solving. Greater understanding of teamwork was attained.

APPENDIX A

BUDGET STATUS 8/11/94

CATEGORY	SPENT TO DATE	TOTAL ALLOCATION	COMMENTS
Federal:			
Job/Task Assessment	$39,042.50	$36,676	Complete
Curriculum Development	$141,452.87	$132,430	Complete
Instruction	$122,517.84	$133,705	Travel to final conf. to be billed in Nov.
Evaluation	$8165.79	$7700	Complete
Admini-stration	$52,315.05	$50,000	Complete
Indirect	$18,000	$18,026	Complete
Total	$381,494.05	$378,537	Complete
Cost Sharing:			
Curriculum Development	$14,397.50	$23,370	
Instruction	$3710.00	$23,595	
Trainee Wages	$110,871.03	$68,112	
Computers	$56,607.01	$55,000	
Total	$185,585.54	$178,581	Matching Requirement Met

APPENDIX B

I. FORKLIFT LOADER/CHECKER

OBJECTIVE NUMBER ONE: CORRELATE WORKPLACE LITERACY SKILLS ENHANCEMENT WITH MANUFACTURING PERFORMANCE.

EVALUATION QUESTIONS:

1. What are the average and typical outcome measures of workplace skills enhancement?
a) What are average and typical learner reaction outcomes?
Learners indicated an above average rating on the overall course.

b) What are average and typical learning outcomes?
All learners showed slight increases in math, reading, and problem solving test scores. Since there were only three learners in this group detailed group performance statistics were not computed, due to the small group size.

c) What are average and typical performance-based outcomes?
Supervisor and learner interviews and evaluator observations indicate an improvement in performance. The loading error rate has decreased slightly for those who participated in the class compared to those who did not participate. Unfortunately, the error rate is still considered too high by plant management. Attitude toward the job has improved. As the department manager stated,"They seem to grasp the concept that they are not just loading a truck -- they are filling a customer order!"

2. What are key indicators of quality manufacturing performance?
Load error rate is continually calculated. As mentioned above, the error rate is slightly less for those who participated in the class, but still not satisfactory.

3. What is the magnitude of the correlation of these measures?
The correlation was not calculated due to the small group size.

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES

EVALUATION QUESTIONS:

1. Did the training positively impact trainee attitudes toward the learning process?
Yes, in most trainees displayed very positive attitudes toward the learning process. At first, there was a lot of peer pressure not to participate, but those who decided to enroll became very creative in inventing excuses for why they decided to attend. One of the learners who had very good reading and math skills wished to study investing strategies. This learner was given direction in how to pursue a personal learning project to improve investment strategies.

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES (Cont.)

2. Did the trainee appreciate the learning experience?
The trainees all expressed appreciation for the learning opportunity, especially during regular working hours.

3. How did the trainee rate:
the learning experience -- average to above average
the assessment process -- resistant to testing, but liked the individual attention.
course usefulness -- initial enthusiasm, then waning interest
course practicality -- weren't sure why they were being taught how to load trucks -- they do it evey day!
instructor performance -- high ratings for instructor
course content -- some resistance to basic math instruction
course activities? -- in general, good acceptance, liked more action exercises, less math drill.

4. Did the trainee feel (s)he was a partner in the learning process?
Trainees were asked what areas they would like to improve in, and the course content was adjusted to meet these requests. Due to the charter to teach basic skills required to perform the specific tasks needed, this individualization had to be blended with the basic skills component.

5. To what extent were line workers basic skills increased?
Reading, math, and problem solving skills showed moderate improvement. One learner is still in need of intensive basic reading and comprehension tutoring.

6. Were the learning objectives met?
Learning objectives were set by the curriculum developer and modified by the instructor to meet the needs of the individual learners. Both learners who completed the course were satisfied that their individual objectives were met.

7. In a pre/posttest comparison, were there positive knowledge gains in basic reading, writing, and math skills?
Yes, positive gains in all three areas.

8. Did trainees perceive an acceleration in knowledge gains?
All three learners had not participated in any formal educational programs recently. This course increased their ability to absorb new knowledge.

9. Was the program long enough?
The trainees felt the program was too long, yet they are still making errors in loading their trucks. Perhaps training is not the total answer to the error-rate problem.

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES (Cont.)

10. Did the trainees have ample time to integrate subject content, skills, and processes?
The course was spread over a twelve week period. This appeared to be ample time to integrate new learnings. There were no concerns raised that this was not possible due to a time constraint.

OBJECTVE NUMBER THREE: DESIGN AND ESTABLISH PROGRAM WHICH ENCOURAGES UTILIZATION.

EVALUATION QUESTIONS:

1. What are the average and typical frequencies of use?
Three participants out of a total of 8 possible yields a 37.5% frequency of participation. Plant management had hoped for a much higher level of participation since the error rate was so high. After completion of the course, the non-participant loader/checkers were again approached and asked to attend another session, but none were interested.

OBJECTIVE NUMBER FOUR: QUALIFICATION RATES FOR ADVANCEMENT

EVALUATION QUESTIONS:

1. To what extent has the Workplace Literacy Program provided opportunities for advancement?
None at this time. The purpose of the forklift loader/checker course was to improve truck loading accuracy. There has been no side effect influencing opportunities for advancement to date.

2. To what extent has the program increased the qualification rate of job applicants?
This training program was designed to enhance the skills of current job holders -- not applicants. Disqualification of the participants is possible, but not likely, especially after their performance improvement as a result of their class participation.

3. To what extent do employees feel a sense of empowerment, added responsibility, and increased decision making?
None measurable at this point. The loader/checker job is designed to allow the worker to have complete control over the truck loading process. The training program was designed to improve the learners skills needed to accurately complete the loading process.

OBJECTIVE NUMBER FIVE: ATTENDANCE

EVALUATION QUESTIONS:

1. What was the frequency of attendance?
Attendance was good, in excess of 95% This may be attributable to class being held on regular work hours.

2. Did anyone leave the program?
One person left the program early. This learner stated she was bored, and that this class wasn't helping her on her job. The error rate summary conducted after the class ended did not confirm her assertion that she didn't need this class. Her error rate was similar to those who did not attend.

3. Why did trainees leave the program?
As stated above, learner was not interested in the course content.

II. PEARSON KITCHEN HELPER

OBJECTIVE NUMBER ONE: CORRELATE WORKPLACE LITERACY SKILLS ENHANCEMENT WITH MANUFACTURING PERFORMANCE.

EVALUATION QUESTIONS:

1. What are the average and typical outcome measures of workplace skills enhancement?

a) What are average and typical student reaction outcomes?
The trainees rated the classes from 4 to 5 on a five-point scale, with 1 as a low point.

b) What are average and typical learning outcomes?
Pre and post test scores were compared. Seventy-five percent of the learners demonstrated significant improvements in test score. The remaining 25% did not show any improvement.

c) What are average and typical performance-based outcomes?
As reported by supervisor interviews, performance improved overall. Supervisors are receiving fewer inquiries for help and assistance from the trainees for minor process deviation corrections.

2. What are key indicators of quality manufacturing performance?
Scrap and rework have decreased in the area affected by the trainees performance. Production start-ups have been at expected rates. Prior to training production start-ups were often below expectations.

OBJECTIVE NUMBER ONE: CORRELATE WORKPLACE LITERACY SKILLS ENHANCEMENT WITH MANUFACTURING PERFORMANCE. (Cont.)

3. What is the magnitude of the correlation of these measures?
This data has not been statistically correlated. Interviews with supervisory personal have provided data that suggest improved performance by a majority of the trainees.

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES

EVALUATION QUESTIONS:

1. Did the training positively impact trainee attitudes toward the learning process?
Trainees all indicated that they enjoyed their work more after completion of the original training program. Several trainees attended additional programs to enhance reading skill.

2. Did the trainee appreciate the learning experience?
Trainees expressed strong appreciation for the experience verbally to this writer.

3. How did the trainee rate:
- the learning experience -- positive reaction to the course
- the assessment process -- used as a diagnostic tool, it was viewed as helpful.
- course usefulness -- learning was applied on the job daily.
- course practicality -- very positive correlation; actual documents and operator interfaces were used in the class.
- instructor performance -- 4.5 on 5-point scale (5 -high)
- course content -- 4.7 rating
- course activities -- 4.5 rating

4. Did the trainee fell (s)he was a partner in the learning process? Several of the trainees participated in the course design; all trainees were able to influence course content during the course delivery.

5. To what extent were line workers basic skills increased?
Reading of panelview screens improved, teamwork improved, verbal and written communications were positively impacted, and basic mathematical skills improved.

6. Were the learning objectives met?
All objectives were met to various degrees.

7. In a pre/posttest comparison, were there positive knowledge gains in basic reading, writing, and math skills?
No testing was done for this class in writing skills. In reading and math, 75 % of the trainees improved.

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES (Cont.)

8. Did trainees perceive an acceleration in knowledge gains?
Yes. All trainees indicated that they were able to learn faster toward the end of the class sessions.

9. Was the program long enough?
No. Several trainees have attended additional classes in reading to improve their basic skills.

10. Did the trainees have ample time to integrate subject content, skills, and processes? Yes. Courses were scheduled for 2 hour sessions, twice weekly. The time between classes was sufficient to integrate classroom theory into workplace practice.

OBJECTVE NUMBER THREE: DESIGN AND ESTABLISH PROGRAM WHICH ENCOURAGES UTILIZATION.

EVALUATION QUESTIONS:

1. What are the average and typical frequencies of use?
Attendance was very good (95%+). In several instances, trainees attended classes during vacation periods, even though they were not required to come to work during their regular shift.

OBJECTIVE NUMBER FOUR: QUALIFICATION RATES FOR ADVANCEMENT

EVALUATION QUESTIONS:

1. To what extent has the Workplace Literacy Program provided opportunities for advancement? At this time, no advancement has been available. This objective has not been met.

2. To what extent has the program increased the qualification rate of job applicants? No new job applicants participated in this training program. Incumbents in this position have improved their skill level in adapting to new technologies recently introduced to their work environment.

3. To what extent do employees feel a sense of empowerment, added responsibility, and increased decision making? Positive impact in this area. Employees are making fewer class to supervisors for routine decisions.

OBJECTIVE NUMBER FIVE: ATTENDANCE

EVALUATION QUESTIONS:

1. What was the frequency of attendance?
Above 95%.

OBJECTIVE NUMBER FIVE: ATTENDANCE (Cont.)

2. Did anyone leave the program?
No early leavers. All continued to completion.

3. Why did trainees leave the program?
Not applicable.

III. DEPARTMENT MECHANIC

OBJECTIVE NUMBER ONE: CORRELATE WORKPLACE LITERACY SKILLS ENHANCEMENT WITH MANUFACTURING PERFORMANCE.

EVALUATION QUESTIONS:

1. What are the average and typical outcome measures of workplace skills enhancement?

a) What are average and typical student reaction outcomes?
Overall reaction to the course was rated 4.2 on a 5-point scale with 5 being high.

b) What are average and typical learning outcomes?
On math and problem-solving tests, the average improvement from pre to post test was a 33% improvement in test score.

c) What are average and typical performance-based outcomes?
Several of the trainees reported the ability to diagnose and machine problems faster and more accurately as a result of their participation in this course. Due to the diverse nature of job assignments it was not possible to collect data comparing one trainee to another on a pre and post training basis.

2. What are key indicators of quality manufacturing performance?
Ability to diagnose and accurately repair machine malfunctions is the primary responsibility of the trainees. As mentioned above the speed and accuracy of these repairs has increased in several instances.

3. What is the magnitude of the correlation of these measures?
A slight decrease in total time to complete a repair (10-15%). A slight increase in accuracy of diagnosis (25% improvement).

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES

EVALUATION QUESTIONS:

1. Did the training positively impact trainee attitudes toward the learning process? Yes. Several trainees responded very favorably to additional training, both internal and external to their workplace.

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES (Cont.)

2. Did the trainees appreciate the learning experience? The overall course was very positively received in interviews with this writer.

3. How did the trainee rate:
- the learning experience -- 4.2 on a 1-5 scale (5 high)
- the assessment process -- enjoyed taking the pre-test; remarked that it was very challenging.
- course usefulness -- course forced participants to use new methods of problem solving. This was positively received.
- course practicality -- mathematics review was helpful to performance of workplace calculations.
- instructor performance - 4.6 on a 1-5 scale.
- course content - 4.4 on a 1-5 scale.
- course activities -- 4.1 on a 1-5 scale.

4. Did the trainee feel (s)he was a partner in the learning process? Only two of the trainees were part of the initial planning process. After the first few class sessions, a consensus-building process was used to ensure more trainee participation.

5. To what extent were line workers basic skills increased? Math skills improved by 33%; Problem-solving skills improved by 32%. as measured by pre and post tests.

6. Were the learning objectives met? Original plan included teaching and practice in elementary algebra and trigonometry. This objective was not fully met. All other objectives were satisfied.

7. In a pre/posttest comparison, were there positive knowledge gains in basic reading, writing, and math skills? Reading and writing were included in this course. Math skills improved by 33%.

8. Did trainees perceive an acceleration in knowledge gains? Yes, very much so. Several trainees remarked very favorably about their ability to learn faster and more efficiently.

9. Was the program long enough? Additional time could have been devoted to pre-work to eliminate the need for review of basic arithmetic in the course. This would have provided enough time to review the elementary algebra and trigonometry.

10. Did the trainees have ample time to integrate subject content, skills, and processes? The course schedule of 2 hour classes held twice weekly provided enough time for application of classroom theory to work practice.

OBJECTVE NUMBER THREE: DESIGN AND ESTABLISH PROGRAM WHICH ENCOURAGES UTILIZATION.

EVALUATION QUESTIONS:

1. What are the average and typical frequencies of use?
Attendance averaged over 90%.

OBJECTIVE NUMBER FOUR: QUALIFICATION RATES FOR ADVANCEMENT

EVALUATION QUESTIONS:

1. To what extent has the Workplace Literacy Program provided opportunities for advancement? There were no opportunities for advancement at this time.

2. To what extent has the program increased the qualification rate of job applicants? No change in the qualification rate.

3. To what extent do employees feel a sense of empowerment, added responsibility, and increased decision making? Participants reported increased confidence in their problem analysis and decision making abilities.

OBJECTIVE NUMBER FIVE: ATTENDANCE

EVALUATION QUESTIONS:

1. What was the frequency of attendance?
Attendance was very good -- over 90%.

2. Did anyone leave the program?
Five participants out of a total of 37 left the program early.

3. Why did trainees leave the program?
One left due to a time conflict with another certification test; the other four were not interested in the course content.

IV. BB'S PROCESSING SYSTEMS OPERATOR

OBJECTIVE NUMBER ONE: CORRELATE WORKPLACE LITERACY SKILLS ENHANCEMENT WITH MANUFACTURING PERFORMANCE.

EVALUATION QUESTIONS:

1. What are the average and typical outcome measures of workplace skills enhancement?

a) What are average and typical student reaction outcomes?
The course was rated 4.1 on a 1-5 scale, with 5 being high.

OBJECTIVE NUMBER ONE: CORRELATE WORKPLACE LITERACY SKILLS ENHANCEMENT WITH MANUFACTURING PERFORMANCE. (Cont.)

b) What are average and typical learning outcomes?
Learners reported an increase in their ability to read the operator interface screens used to control their equipment. Instructors reported an increase in participants vocabulary and recognition of special-use acronyms and abbreviations.

c) What are average and typical performance-based outcomes?
On the job performance as rated by the participants supervisors has shown some improvement in reduction of calls for assistance for minor process deviations.

2. What are key indicators of quality manufacturing performance?
Key indicators of quality performance are scrap and rework rates, quality control inspections, and production output.

3. What is the magnitude of the correlation of these measures?
Very slight changes in these indicators. Total production output for the jobs affected by these training sessions has been more consistent, leading to the ability to open distribution to additional geographic regions in advance of schedule.

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES

EVALUATION QUESTIONS:

1. Did the training positively impact trainee attitudes toward the learning process? As reported by trainee reaction sheets, the typical attitude toward the learning process improved through the activities of this class.

2. Did the trainee appreciate the learning experience?
The trainees did appreciate the experience. It allowed them the opportunity to improve their skill in reading of operator interfaces. Teamwork and communication skills were also mentioned as positively impacted.

3. How did the trainee rate:
- the learning experience -- 4.2 on 1 to 5 scale (5=high).
- the assessment process -- used for diagnostic purposes only.
- course usefulness -- 4.1 on 1 to 5 scale.
- course practicality -- high, all exercises were based on work examples.
- instructor performance -- 4.3 on 1 to 5 scale.
- course content -- 4.1 on 1 to 5 scale.
- course activities -- high, all exercises used workplace materials.

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES
(Continued)

4. Did the trainee feel (s)he was a partner in the learning process? The trainees provided some input into the course plan at the development stage and provide continuing criticism of the actual content and exercises as the course continued. The trainee comments were reflected in course revisions and exercises for the next sessions.

5. To what extent were line workers basic skills increased? Increases in reading comprehension, teamwork, verbal and written communications, and problem solving abilities were reported.

6. Were the learning objectives met? Objectives were met to varying degrees. Original objectives had to be changed often during the course due to changes in the work environment and due to schedule changes. Also, some personnel changes in mid-course required that some material had to be repeated instead of moving to more advanced topics.

7. In a pre/posttest comparison, were there positive knowledge gains in basic reading, writing, and math skills? No pre and post tests were completed for this series of courses. The scheduling of participants was very sporadic due to changes in production requirements and participant availability. The participants were divided into three classes based on ability. The lowest ability level group included some non-readers. Very little improvement was reported from this group. The other two groups reported improvement in word recognition of technical words used on the operator interface panels.

8. Did trainees perceive an acceleration in knowledge gains? No reports of any improvements in this area.

9. Was the program long enough? No, the program needs to be longer to make it possible to show improvements with all learners.

10. Did the trainees have ample time to integrate subject content, skills, and processes? No, more time would have been helpful.

OBJECTVE NUMBER THREE: DESIGN AND ESTABLISH PROGRAM WHICH ENCOURAGES UTILIZATION.

EVALUATION QUESTION:

1. What are the average and typical frequencies of use?
Attendance was very good. Forty of the 48 hours of class were offered in 8-hour sessions as the fifth work day of the normal work week. The final 8-hour session was conducted on a Saturday, as a sixth work day, with overtime pay. Scheduling made it very convenient for participants to attend.

OBJECTIVE NUMBER FOUR: QUALIFICATION RATES FOR ADVANCEMENT

EVALUATION QUESTIONS:

1. To what extent has the Workplace Literacy Program provided opportunities for advancement? No advancement opportunities to report at the present time.

2. To what extent has the program increased the qualification rate of job applicants? In this area, several marginal performers have shown increases in their ability to perform minimal job functions. They were in danger of being put on probation for poor performance. This has been avoided by their skill improvements due to the course.

3. To what extent do employees feel a sense of empowerment, added responsibility, and increased decision making? Several trainees reported that they are making fewer calls to their supervisors for advice and direction when responding to minor process deviations.
This seems to be a common result of this training program.

OBJECTIVE NUMBER FIVE: ATTENDANCE

1. What was the frequency of attendance?
Attendance was very good, over 95%. Since attendance was mandatory
as part of a normal work week, the only participants who did not attend were ill or on vacation.

2. Did anyone leave the program?
Several participants left the program due to schedule changes. All employees in the target work group were required to attend. Those who left the work group voluntarily were not allowed to attend further classes.

3. Why did trainees leave the program?
Trainees left the work assignment for other positions within the manufacturing facility. The new positions were more desirable for a variety of reasons -- work load, shift, or supervisor.

V. BUTTERFINGER PACKAGING SYSTEMS OPERATOR

OBJECTIVE NUMBER ONE: CORRELATE WORKPLACE LITERACY SKILLS ENHANCEMENT WITH MANUFACTURING PERFORMANCE.

EVALUATION QUESTIONS:

1. What are the average and typical outcome measures of workplace skills enhancement?

a) What are average and typical student reaction outcomes?
Participants rated the course 4.6 on a 1 to 5 scale (5=high).

b) What are average and typical learning outcomes?
Math and problem solving improved, based on pre and post test scores.

c) What are average and typical performance-based outcomes?
Supervisors and managers reported improved job performance in ability to diagnose production problems and in completion of daily reports.

2. What are key indicators of quality manufacturing performance?
Production outputs, downtime, scrap and rework.

3. What is the magnitude of the correlation of these measures?
All areas have shown slight improvements since the commencement of this training program. Several other initiatives have also influenced these indicators of quality manufacturing performance. Supervisors reports clearly state that the participants have been responsible for improvements in these factors.

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES

EVALUATION QUESTIONS:

1. Did the training positively impact trainee attitudes toward the learning process? Yes, trainees reported renewed interest in the learning process. Several have continued their formal learning with other coursework within the facility, external to the facility, and with computer-delivered lessons on their own time.

2. Did the trainee appreciate the learning experience?
Very positive response to the availability of this program.

3. How did the trainee rate:
   - the learning experience -- 4.6 on 1 to 5 scale (5=high).
   - the assessment process -- used for diagnosis, very well received.
   - course usefulness -- 4.3 on 1 to 5 scale.

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES
(Continued)

3.How did the trainee rate (Continued):
- course practicality -- has helped with completion of job duties.
- instructor performance -- 4.8 on 1 to 5 scale.
- course content -- 4.3 on 1 to 5 scale.
- course activities -- some activities should have more time devoted to them.

4. Did the trainee feel (s)he was a partner in the learning process? Some of the trainees were consulted as part of the original job task analysis and course development. During the course, each trainee was able to customize their individual assignments based on their abilities and needs.

5. To what extent were line workers basic skills increased? Improvements in problem solving and math skills were measured. Interpersonal communications and teamwork were reported to be positively impacted.

6. Were the learning objectives met?
Instructors reported that they actually exceeded the objectives in several areas due to the strong skills possessed by most participants.

7. In a pre/posttest comparison, were there positive knowledge gains in basic reading, writing, and math skills?
Reading and math skills improved from 25 - 33% on average. No writing tests were given. Supervisors reported improved quality of daily production reports.

8. Did trainees perceive an acceleration in knowledge gains?
Yes, trainees especially reported improvements in problem-solving ability.

9. Was the program long enough?
Yes. Additional work may be needed to bring skills to new levels, but the objectives were satisfied with the course as structured.

10. Did the trainees have ample time to integrate subject content, skills, and processes? Yes, the course was conducted in 2-hour segments, twice per week, for a total of 12 weeks. Time was reported to be adequate.

OBJECTIVE NUMBER THREE: DESIGN AND ESTABLISH PROGRAM WHICH ENCOURAGES UTILIZATION.

EVALUATION QUESTIONS:

1. What are the average and typical frequencies of use?
The course was offered to a total of 36 employees; 19 enrolled in the course. This was typical of all six targeted groups for this project.

OBJECTIVE NUMBER FOUR: QUALIFICATION RATES FOR ADVANCEMENT

EVALUATION QUESTIONS:

1. To what extent has the Workplace Literacy Program provided opportunities for advancement? At this time, there have been no advancement opportunities available for the participants.

2. To what extent has the program increased the qualification rate of job applicants? All participants were well-qualified for their positions. The program helped improve their daily report writing and scrap, rework, and production rates. None of the participants was in need of training to meet minimum qualifications.

3. To what extent do employees feel a sense of empowerment, added responsibility, and increased decision making? Supervisors reported fewer calls for advice on minor machine problems. Participants were seen interacting more with the mechanical and electrical repairers working on their production lines.

OBJECTIVE NUMBER FIVE: ATTENDANCE

EVALUATION QUESTIONS:

1. What was the frequency of attendance?
Attendance was very good (over 90%); the only absences reported were for conflicts with overtime required for production purposes and occasional problems with transportation.

2. Did anyone leave the program? One person left the program due to escessive absenteeism.

3. Why did trainees leave the program?
The one person who left had trouble arranging transportation home. The course was offered immediately after normal work hours for a 2-hour period. The trainee normally rode home with a person who was not in the class.

VI. BUTTERFINGER MANUFACTURING SYSTEMS OPERATOR

OBJECTIVE NUMBER ONE: CORRELATE WORKPLACE LITERACY SKILLS ENHANCEMENT WITH MANUFACTURING PERFORMANCE.

EVALUATION QUESTIONS:

1. What are the average and typical outcome measures of workplace skills enhancement?

a) What are average and typical student reaction outcomes?
The overall course was rated 4.8 on a 1 to 5 scale (5 high).

b) What are average and typical learning outcomes?
Learning outcomes did not show any change in performance.

c) What are average and typical performance-based outcomes?
Supervisors reported improved performance on production start ups, more accurate completion of daily reports, and a reduction in calls to supervisors for advice on minor problems.

2. What are key indicators of quality manufacturing performance?
Scrap, rework, production output.

3. What is the magnitude of the correlation of these measures?
All three have shown slight improvements based on supervisors observations. None of the improvements have been analyzed statistically.

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES

1. Did the training positively impact trainee attitudes toward the learning process? Yes, trainees demonstrated increased commitment and interest in improving their skills.

2. Did the trainee appreciate the learning experience?
Trainees were very appreciative of the opportunity to participate in this course.

3. How did the trainee rate:
- the learning experience -- 4.8 on 1 to 5 scale (5=high).
- the assessment process -- used for diagnosis only, no feedback.
- course usefulness -- 4.7 on 1 to 5 scale.
- course practicality -- participants report using what they learned on a daily basis.
- instructor performance -- 4.8 on 1 to 5 scale.
- course content -- 4.7 on 1 to 5 scale.
- course activities -- trainees reported that exercises and other activities were interesting and useful.

OBJECTIVE NUMBER TWO: IMPROVE WORKPLACE LITERACY SKILLS OF TRAINEES (Continued)

4. Did the trainee feel (s)he was a partner in the learning process? Yes, trainees helped design the original curriculum and provided direction for individual modifications as the course progressed.

5. To what extent were line workers basic skills increased? Math, reading, and problem-solving skills all showed improvement.

6. Were the learning objectives met?
Yes, all objectives were met.

7. In a pre/posttest comparison, were there positive knowledge gains in basic reading, writing, and math skills? Due to the small size of the classes (10 total between 3 classes), and wide range of abilities, pre- and post-tests were not given for this course.

8. Did trainees perceive an acceleration in knowledge gains? Trainees reported that their abilities increased, even if not able to support this perception by improved test scores.

9. Was the program long enough? Trainees would like to spend more time on problem solving activities. These seemed to be useful to them on their jobs. Detailed analysis of specific work place problems was suggested for additional courses.

10. Did the trainees have ample time to integrate subject content, skills, and processes? Course was conducted in 2-hour segments, twice weekly, over a 12 week period. This appeared to be a good time frame for this type of material.

OBJECTVE NUMBER THREE: DESIGN AND ESTABLISH PROGRAM WHICH ENCOURAGES UTILIZATION.

EVALUATION QUESTIONS:

1. What are the average and typical frequencies of use?
Of a total of 12 potential participants, 8 attended. Two additional attendees were from a support group who expressed interest in participating. They were allowed to participate based on the terms of the grant that required all interested learners be given the opportunity to attend.

OBJECTIVE NUMBER FOUR: QUALIFICATION RATES FOR ADVANCEMENT

EVALUATION QUESTIONS:

1. To what extent has the Workplace Literacy Program provided opportunities for advancement? At this time, no opportunities for advancement have been available.

2. To what extent has the program increased the qualification rate of job applicants? All participants have been in their current positions for extended periods and are performing acceptably.

3. To what extent do employees feel a sense of empowerment, added responsibility, and increased decision making? Supervisors report fewer calls for advice and direction on routine production deviations. Also, increased communication between participants has been observed.

OBJECTIVE NUMBER FIVE: ATTENDANCE

EVALUATION QUESTIONS:

1. What was the frequency of attendance?
Attendance was very good, in excess of 90%.

2. Did anyone leave the program?
No. One participant had poor attendance, but did not officially leave the program.

3. Why did trainees leave the program?
None left.

Neslte's Federal Workplace Literacy Project

PR/AWARD NO. U198A30096

External Evaluator's Commentary

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September, 1994

ABSTRACT

The following is a critical review of the Internal Evaluation of Nestle's Federal Workplace Literacy Project. This short paper is divided into three sections. The first establishes the basis for evaluation review or meta-evaluation and gives those models with differing criteria of goodness in evaluation. The second section looks at the structure of the evaluation project as a whole. We made some suggestions for reformatting the contents and enhancing readability. In section three we make specific comments on the draft itself. Finally, we close by endorsing the evaluation of what appears to be an excellent educational program.

In preparation for this commentary, or meta-evaluation, of the Nestle's Internal Report of its Workplace Literacy Grant, PR/Award No. U198A30096, I have read the report and accompanying supporting documentation. On the whole, the evaluation questions seem to be answered and the program effective in supporting its goals. The overall design for my comments are divided into three major sections. The first section deals with the proper conduct of meta-evaluation, for which we have consulted several cited sources. In this section we provide the standards and criteria for successful evaluation. In the second section we consider how best to structure the report in terms of its groupings of supporting evidence. The third and final section poses questions and seeks elaborations from the authors of the report.

Section I: Why Meta-Evaluation?

The primary assumption of meta-evaluation is that evaluation should be subject to critical review and scrutiny by an outside source. It should provide a balance of perspectives to aid decision making. We looked at three models of meta-evaluation. Cook and Gruder (1978), St. Pierre (1982), and Martin (1981) have identified several models for meta-evaluation and specified criteria to judge the adequacy of evaluation. Cook and Gruber (1982) were among the first to propose a review essay or narrative of evaluations. What other proponents of meta-evaluation suggest include secondary reanalysis of data and reviews of the literature.

Rather than reanalyze data or conduct extensive literature reviews, we opt for the review essay because of its practicality.

Stake (1969) proposes that all evaluations have some sort of criteria and/or structure that separates good evaluations from bad. In his influential article, "Table of Contents for a Final Evaluation Report" he proposed the following as hallmarks of good evaluations:

- Objectives of the Evaluation
- Specifications of the Program
- Program Outcomes
- Relationships and Indicators
- Judgment of Worth

While these categories are generic and broad enough to be generalizable to most any evaluation, they lack specificity to make meaningful judgments concerning specific evaluation.

Martin (1981), working for the California Evaluation Services, has developed a checklist of criteria which usually indicative of quality evaluations. As all criteria are not germane to this evaluation, some have been eliminated. We use these as criteria for use in our meta-evaluation.

Overall Proposal

- Organization
- Identification of Need

- o Definition of Goals, Objectives and Intents
- o Readability

Evaluation Design

- o Needs Assessment Data
- o Stated Purpose of the Evaluation
- o Description of Instruments

Assessment Techniques

- o Testing Schedule
- o Validity/Reliability of Instruments
- o Data Storage and Retrieval

Report Characteristics

- o Adequacy of Recommendations
- o Generalizability of Results
- o Continuation of Program

These criteria are hallmarks of good evaluations but they do not have to be presented in this specific format. Instead, much of what is presented is essentially covered in the standard research report format which we urge Nestle's to adopt in their internal evaluation.

Section II: How to Structure the Evaluation Report

In the Initial Draft of the Internal Evaluation, the majority of the report was devoted to the answering the evaluation questions posed in the evaluation design in a very

straight-forward way. While we applaud the fidelity to the design, we urge the more traditional evaluation research format. These include Executive Summary, Background or Rationale of the Program, Subjects, Program, Teaching Staff, Results, and Conclusion.

Further, the report contained no graphic displays nor charts which would be helpful for the reader to comprehend large amounts of data. Nor did the report switch fonts between evaluation questions and responses to those questions. If it is still feasible at this point, the company may want to consider incorporating graphs or charts that add visual summary to the data. Also, to enhance the visual appeal of the report, consider offsetting the design questions from the answers by switching fonts, underlining or italics. Finally, I find a ragged right page column easier to read than right justified. This eliminates the different spacings between the words and letters. These suggestions should be considered subjective.

It appears that there is ample data to support convincing arguments that these programs were, in the large part, successful. What is necessary is to rearrange the material into a standard evaluation format. These include:

Executive Summary

This is a one to two page summary of the program, its rationale, the sample population and the results of the evaluation. This section would also contain recommendations or

these could be put separately under its own heading.

Rationale for the Program

This section provides the rationale for the program or what need it addresses. It tells why the program is necessary. It also

tells what goals the program hope to address? It provides the answer to what this program and not another.

Sample

This sections would give a combined portrait of the students in the population. It gives the total number of participants, why the entered the program. It reports what entry skills the program participants have and why they entered the program. Finally, it presents the racial, ethnic and gender breakdown of the participants.

Teaching Staff

Sometimes differences in program outcomes are attributable to differences in teaching quality. Although this does not seem to be problem in this evaluation, you may want to consider make this point more emphatic.

Instrumentation

Unless it is not specifically called for, we recommend that

all the instruments used to evaluated the courses be included in appendices. Alternatively, the company may want to how the instruments were designed, how issues of validity and reliability were dealt with. You may want to include how the instruments were piloted, either among colleagues or among students.

Results

This section presents the results of the six courses along the four dimensions posed by the evaluation design. For example, graphing the satisfaction and achievement results of the six courses (one course did not collect these data) would permit readers to see at a glance how each course compares to each other. These data displays offer the reader to compare each course to the other but also against the five point criteria.

In addition, it appears that there was a considerable amount of interview data. We think it would strengthen the results to have these more available in the report. Actual quotes from the sources are best.

Section III: Specific Comments on the Draft

Fork Lift Loader/Checker

Despite the difficulties of being a pilot class for the project, it appears that this course had very positive results. There were positive gains in reading, math and writing. It also

appears that the students enjoyed the program and the instructor. Finally, supervisors noticed a change subsequent to training.

There appears to be only one difficulty that is not fully explained in the draft. With a target audience of eight, only three chose to opt into the program. There could be several factors and we assume that scheduling and the fact that it was a pilot program rank high. The company may want to explain more fully why less than 50% of the target audience did not choose to attend.

Pearson Kitchen Helpers
BB's Processing Systems Operator
Butterfinger Manufacturing Systems Operator
Butterfinger Packaging Systems Operator

The above four courses are similar enough to be treated as a group. On first read of the evaluations, it appears that these courses were very successful and we are sure that they were because they produced favorable ratings, satisfactory achievement gains and good job performance transfers. But there are some questions that need to be addressed to ensure that this is in fact the case. First, it is difficult to determine how many students actually enrolled in the course? And why other eligible students did not enroll. Also, the following questions should be addressed here if they were not included elsewhere in the report:

How was the course structured?

Did the structure of the course differ substantially from the others?

Nestle's may want to consider including the answers to these questions in their final report.

Summary

It appears that the Nestle's program has produced considerable success in promoting literacy in the workplace. The courses were solidly designed with high participant input. The instructors were very competent and received high ratings from their students. Where measured, the courses produced excellent results in terms of student satisfaction, student achievement, and skills transfer to the workplace.

Our recommendations for the report are the following.

- Restructure the format to be more consistent with a traditional research and evaluation format.
- If possible, incorporate graphics.
- If possible, use varying fonts offsetting questions from response.
- Provide instruments in appendices.

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